6.0 MONITORING PLAN

The goal of the Wells HCP is to achieve "No Net Impact" to the aquatic resources that encounter the Wells hydroelectric project. The monitoring and evaluation programs as set forth in this section are intended to assure that the survival standards are being met under the Wells HCP.

6.1 FUNDING OF EVALUATION AND MONITORING PROGRAMS

On-site evaluation and monitoring programs shall be fully funded by the DCPUD. Specific study design and implementation details for all on-site evaluation and monitoring activities shall be determined by the DCPUD in consultation with the Wells Project Coordinating Committee (WCC). Funding of off-site evaluation and monitoring will be provided by the Plan Species Account under the direction of the Tributary Committee.

6.1.1 Adult Passage Evaluation

The DCPUD has funded several adult passage studies at the Wells project. In 1992, the DCPUD sponsored a radio-telemetry study to evaluate adult sockeye salmon passage. The three mid-Columbia PUDs funded a radio-telemetry study to evaluate spring and summer chinook passage at the five mid-Columbia dams in 1993. Further adult fish passage studies are contemplated under this HCP. Any new adult passage measure recommended to improve passage must be biologically effective and cost efficient and approved by the WCC.

6.1.2 Evaluation of Juvenile Passage Survival

Project Survival Studies

The advent of PIT (passive integrated transponder) tag technology has substantially improved the ability to accurately tag, recover and passively interrogate individual juvenile salmonids. Detailed recovery information can now be collected to estimate survival in a more accurate, less intrusive and more cost effective manner. There are several new estimation procedures that have been developed to take advantage of the ability to determine the exact identification of an individual fish. The Single release-recapture and the Modified Single release-recapture are variations of the study designs of Cormack (1964) which can be used to estimate survival. In addition to these models, the traditional paired release-recapture model, used for Columbia River survival studies since the 1960's, can also be executed more precisely through the marking of study animals with PIT tags. On a per fish basis, the Single release-recapture model is much more accurate. However, to be able to estimate survival with this model, two collection and interrogation sites must be present downstream of the section of river of interest. Without a collection and interrogation site at Wells Dam, a single release-recapture model cannot be used to estimate the survival of fish only through the Wells complex. Therefore, paired releases, consisting of two relative releases of

fish, must be used to estimate survival through the Wells Dam complex.
The DCPUD intends to conduct a pilot PIT-tag survival study of the Wells project starting in 1998 with the full study to start in 1999. The objective of the study will be the determination of the survival of juvenile salmonids passing through the Wells reservoir, dam and tailrace. The study is anticipated to use the paired and single release methodology with PIT-tagged chinook, sockeye and steelhead. The DCPUD anticipates that the study would be a three- or four-year study designed in consultation with the WCC (see Section 5.1.2).

Data collected from the project survival study will be used to adjust the level of compensation the DCPUD provides for hatchery operation and maintenance, and for the Tributary Habitat Fund. This adjustment will ensure the level of funding is commensurate with the concept of "No Net Impact".

Run Timing/Bypass Efficiency

Information on the timing of the juvenile migration is critical for determining when to start the operation of the Wells Bypass System. Douglas PUD will continue the hydroacoustic monitoring program to determine the initiation of the bypass operation as established under the 1990 Wells Settlement Agreement. Per agreement of all parties, DCPUD will operate the bypass system continuously between April 10 and August 15, annually. Initiation of the bypass system may occur between April 1 and April 10 if the hydroacoustic index reaches 150, as verified by the fyke netting. Bypass termination may occur after August 15 if the hydroacoustic index declines to 250 as verified by fyke netting. The bypass system will not operate after August 31.

Bypass Performance

The DCPUD will evaluate the performance of the Wells juvenile bypass system approximately every five years (commencing five years after the completion of the project survival study) at the determination of the WCC to verify that the system is operating as expected. If the evaluation shows a substantial difference from the 95 percent survival goal at the dam, the DCPUD will make adjustments to the bypass operation as stated in the Wells 1990 Long-term Settlement Agreement.

6.1.3 Water Quality

No specific water quality problems have been attributed to the Wells project. Water quality monitoring at the Wells project consists of total dissolved gas (TDG) supersaturation, water temperature and turbidity measurements. These measurements are part of ongoing programs. Additionally, the Wells project cooperates with federal operators in the nitrogen abatement program.

6.1.4 Hatchery Programs

Hatchery evaluation programs are presently in progress to meet the requirements of the 1990 Wells Long-term Fisheries Settlement Agreement or requirements under Section 10 of the ESA. These evaluation programs will continue as approved by the WCC.

6.2 TRIBUTARY CONSERVATION PLAN

The Tributary Committee will have the responsibility to decide what evaluation and monitoring activities will be necessary to evaluate the efficacy of the actions implemented through the Plan Species Account. Evaluation studies of tributary habitat improvement measures shall be implemented within the limits of financing available from the Account.